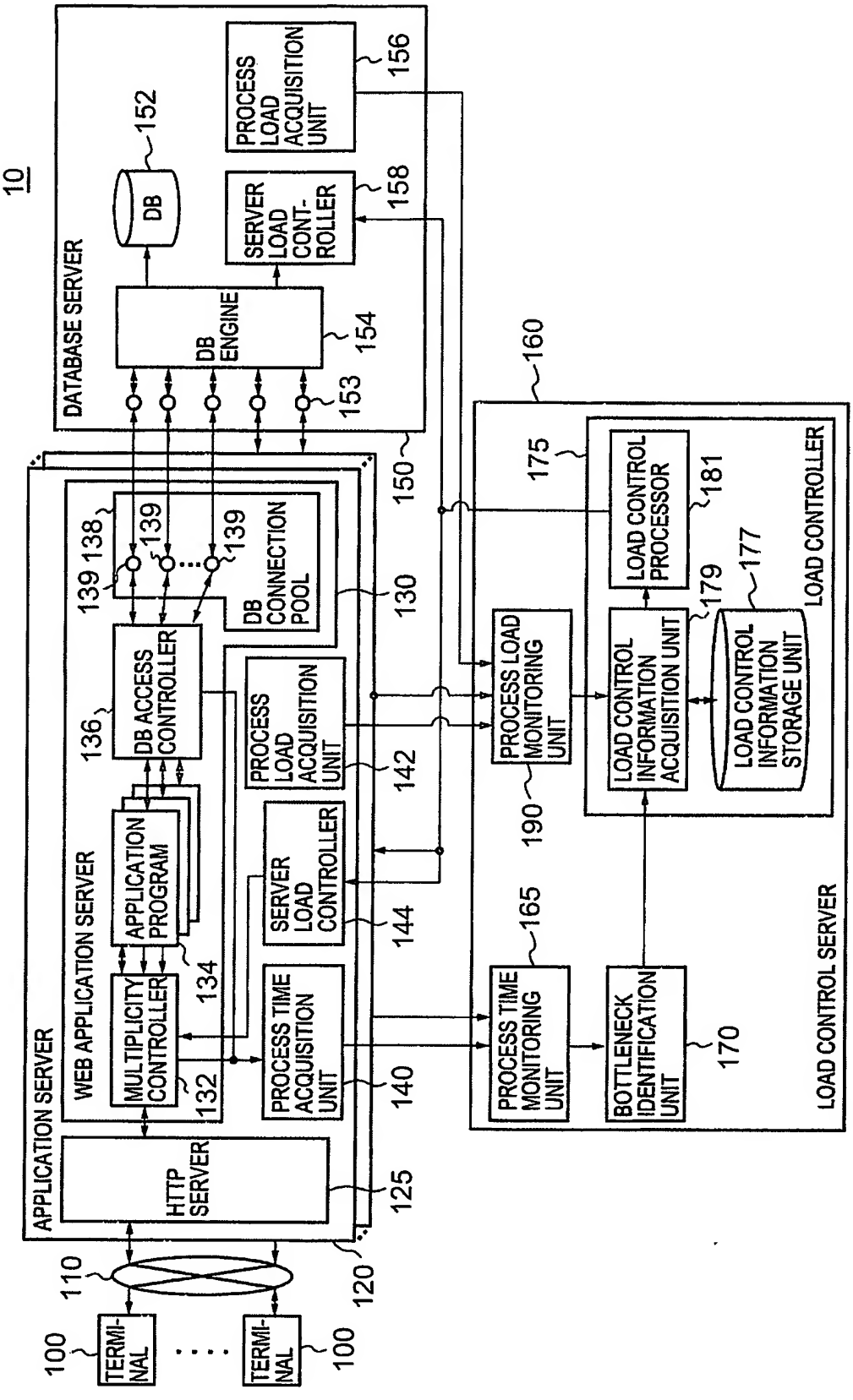
10
DATABASE SERVER
DB
152
PROCESS LOAD ACQUISITION UNIT
156
SERVER LOAD CONT-ROLLER
158
DB ENGINE
154
153
160
150
APPLICATION SERVER
WEB APPLICATION SERVER
DB CONNECTION POOL
130
139
138
DB ACCESS CONTROLLER
136
APPLICATION PROGRAM
134
MULTIPLICITY CONTROLLER
132
HTTP SERVER
125
PROCESS TIME ACQUISITION UNIT
140
PROCESS LOAD ACQUISITION UNIT
142
SERVER LOAD CONTROLLER
144
120
110
100
TERMI-NAL
LOAD CONTROLLER
LOAD CONTROL PROCESSOR
175
181
179
177
LOAD CONTROL INFORMATION ACQUISITION UNIT
LOAD CONTROL INFORMATION STORAGE UNIT
PROCESS LOAD MONITORING UNIT
190
165
PROCESS TIME MONITORING UNIT
BOTTLENECK IDENTIFICATION UNIT
170
LOAD CONTROL SERVER

Fig. 1

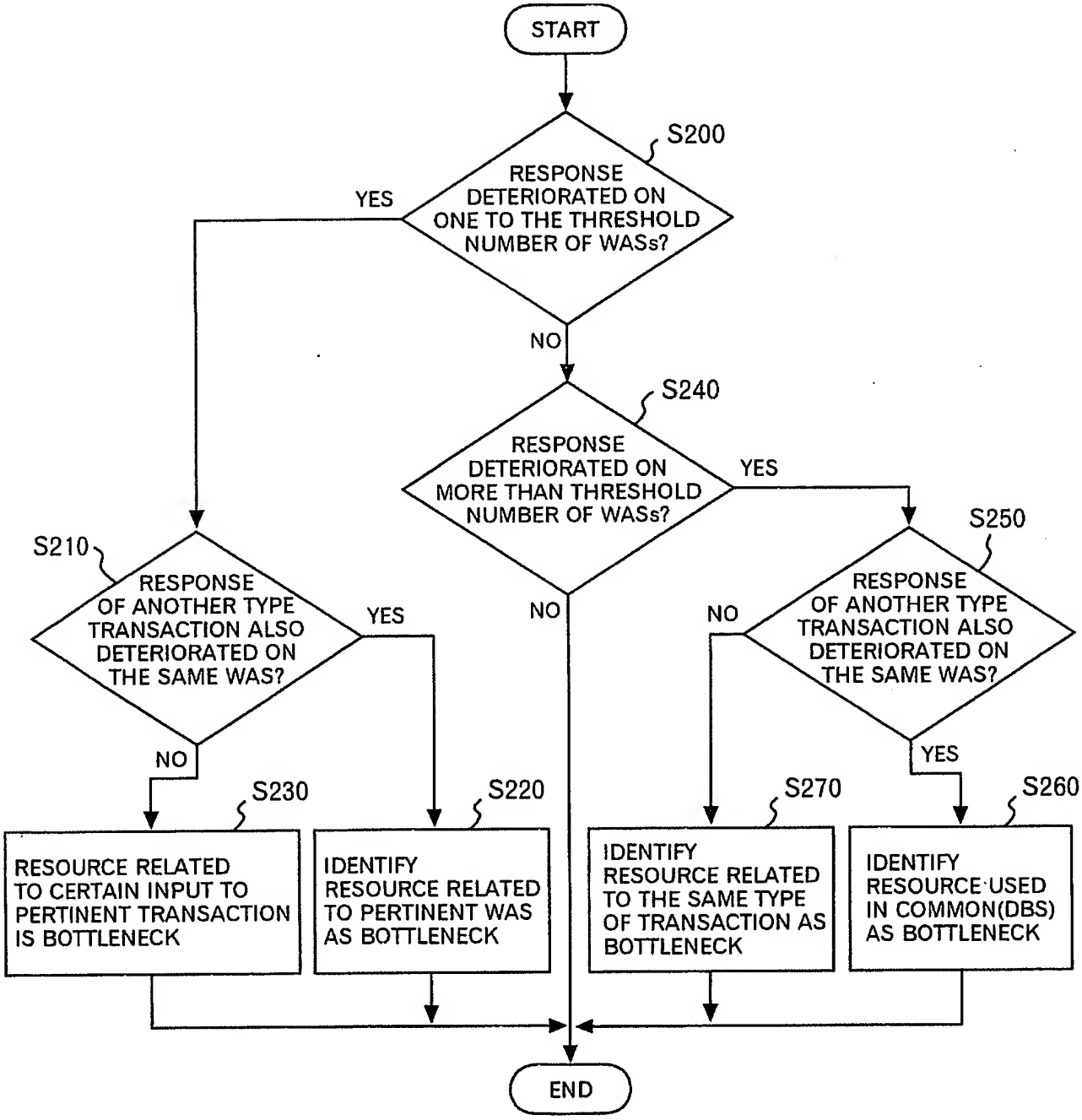
START
S200
RESPONSE DETERIORATED ON ONE TO THE THRESHOLD NUMBER OF WASs?
YES
NO
S240
RESPONSE DETERIORATED ON MORE THAN THRESHOLD NUMBER OF WASs?
YES
NO
S210
RESPONSE OF ANOTHER TYPE TRANSACTION ALSO DETERIORATED ON THE SAME WAS?
YES
NO
S250
RESPONSE OF ANOTHER TYPE TRANSACTION ALSO DETERIORATED ON THE SAME WAS?
NO
YES
S230
RESOURCE RELATED TO CERTAIN INPUT TO PERTINENT TRANSACTION IS BOTTLENECK
S220
IDENTIFY RESOURCE RELATED TO PERTINENT WAS AS BOTTLENECK
S270
IDENTIFY RESOURCE RELATED TO THE SAME TYPE OF TRANSACTION AS BOTTLENECK
S260
IDENTIFY RESOURCE USED IN COMMON(DBS) AS BOTTLENECK
END

Fig. 2

TYPE OF LOCATION OF BOTTLENECK	RESOURCE	DETECTION CONDITION	DETERMINATION CONDITION	CANCEL CONDITION
RESOURCE USED IN COMMON (DBS)	PROCESSOR	USAGE RATE IS EQUAL TO OR MORE THAN x% PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	DISK (DB, LOG OR OTHERS)	USAGE RATE IS EQUAL TO OR MORE THAN x% PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	MEMORY	THE NUMBER OF TIMES FOR PAGING IS EQUAL TO OR MORE THAN x TIMES PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	DB BUFFER	BUFFER MISS RATE IS EQUAL TO OR MORE THAN x% PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
WAS	PROCESSOR	USAGE RATE IS EQUAL TO OR MORE THAN x% PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	DISK	USAGE RATE IS EQUAL TO OR MORE THAN x% PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	MEMORY	PAGING PERFORMANCE COUNT IS EQUAL TO OR MORE THAN x TIMES PER n SECONDS ON AVERAGE	CONTINUES m TIMES	NOT DETECTED f TIMES
	JVM MEMORY	GC IS TO BE PERFORMED x TIMES OR MORE PER n SECONDS	CONTINUES m TIMES	NOT DETECTED f TIMES
	DB CONNECTION	MULTIPLICITY REACHES THE UPPER LIMIT	OCCURRENCE TIME	WHEN WAS IS HALTED
RESOURCE RELATED TO TRANSACTION	WAS PROCESSOR	DBS PROCESS TIME/PROCESS TIME IS EQUAL TO OR LOWER THAN x%	OCCURRENCE TIME	NO OCCURRENCE FOR n SECONDS
	DBS PROCESSOR	DBS PROCESS TIME/PROCESS TIME IS EQUAL TO OR LOWER THAN x%. WITHIN n SECONDS, IT IS TO BE DETERMINED THAT DBS PROCESSOR IS A BOTTLENECK	OCCURRENCE TIME	NO OCCURRENCE FOR n SECONDS
	DBS DISK	DBS PROCESS TIME/PROCESS TIME IS EQUAL TO OR LOWER THAN x%. WITHIN n SECONDS, IT IS TO BE DETERMINED DBS DISK IS A BOTTLENECK	OCCURRENCE TIME	NO OCCURRENCE FOR n SECONDS

Fig. 3

JP920030230

BOTTLENECK	RESOURCE	LOAD CONTROL INFORMATION
RESOURCE USED IN COMMON (DBS)	PROCESSOR	LOAD CONTROL PROCESS 3 → 1 → 4 → 2 → 5 → 6
	DISK (DB)	LOAD CONTROL PROCESS 2 → 1 → 6 → 5
	DISK (LOG)	LOAD CONTROL PROCESS 1 → 2 → 5 → 6
	DISK (OTHER)	LOAD CONTROL PROCESS 1 → 5
	MEMORY	LOAD CONTROL PROCESS 1 → 5
	DB BUFFER	LOAD CONTROL PROCESS 1 → 5
WAS	PROCESSOR	LOAD CONTROL PROCESS 3 → 1 → 5
	DISK	LOAD CONTROL PROCESS 1 → 5
	MEMORY	LOAD CONTROL PROCESS 1 → 5
	JVM MEMORY	LOAD CONTROL PROCESS 1 → 5
	DB CONNECTION	LOAD CONTROL PROCESS 1 → 5
RESOURCE RELATED TO TRANSACTION	WAS PROCESSOR	LOAD CONTROL PROCESS 5
	DBS PROCESSOR	LOAD CONTROL PROCESS 5 → 6
	DBS DISK	LOAD CONTROL PROCESS 5 → 6

Fig. 4

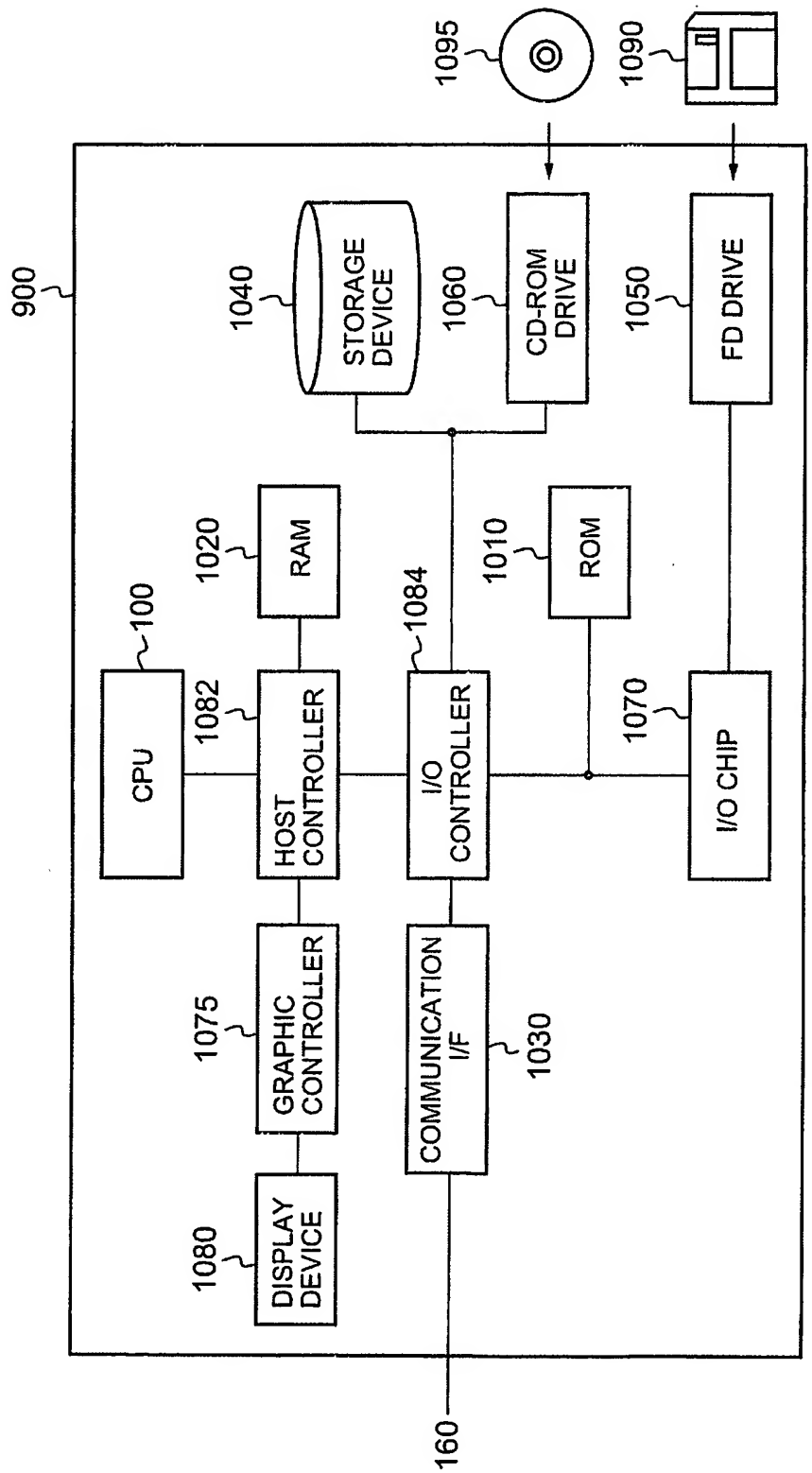
900
1095
1090
1040
STORAGE DEVICE
1060
CD-ROM DRIVE
1050
FD DRIVE
1020
RAM
1010
ROM
100
CPU
1082
HOST CONTROLLER
1084
I/O CONTROLLER
1070
I/O CHIP
1075
GRAPHIC CONTROLLER
1030
COMMUNICATION I/F
1080
DISPLAY DEVICE
160

Fig. 5